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ABSTRACT

The University of Mid-America (UMA) is a central agency which offers course development services to member institutions and conducts planning, research, and evaluation in the areas of adult education and learning delivery systems. Originally conceived as an outreach program of the State University of Nebraska, UMA has expanded to serve the needs of the entire upper Midwest with television-delivered instruction in traditional academic subjects, cross-disciplinary subjects, continuing professional education topics, and recreational courses. Course development teams generate complete course packages which are then transmitted by state agencies. Two of the needs of the UMA are: (1) additional research in the effectiveness and cost-effectiveness of special courses delivered via television; and (2) professionals trained in the eclectic field of television teaching. (EMH)

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THE UNIVERSITY OF MID-AMERICA: A NEW APPLIED LEARNING SYSTEM

Second Symposium on Applied Learning Systems: Professional Development Program

In conjunction with the First International Learning Technology Congress and Exposition on Applied Learning Technology For Human Resource Development
Sheraton Park Hotel
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U.S. DEPARTMENT OF HEALTH, EDUCATION & WELFARE
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INTRODUCTION

Because the University of Mid-America is a major operational experiment in learning technology, we are quite concerned with the area of professional development. The instructional media are still emerging as a field of study; and those of us in the business of developing learning systems are continually discovering new areas of professional competence for which few, if any, training programs exist. In order to provide a context for a discussion of our professional development needs, I would like to describe to you today the steps that we at the

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University of Mid-America are taking towards developing a large and ambitious teaching-at-a-distance system in a five state region of the upper Midwest. A not-for-profit corporation, UMA is a consortium of seven state universities in five midwestern states. The presidents of Iowa and Iowa State Universities, Kansas and Kansas State Universities, and the Universities of Missouri, Nebraska and South Dakota serve as the Board of Trustees. UMA has four primary objectives:

- the design and development of mediated credit and non-credit courses for use off-campus in teaching at-a-distance programs;
- research and evaluation of formal adult teaching and learning;
- assistance with the planning and development of state open learning delivery mechanisms;
- dissemination of both course work and research products to all those so interested.

UMA has no campus. It grants no credit; it awards no external degree. Rather, UMA is a central agency offering course development and evaluation services to its member institutions. The actual delivery and accreditation of courses remains the responsibility of the member state institutions.

UMA is developing an applied learning system, engaged in the day-to-day creation and delivery of postsecondary opportunities to a variety

of adults. At the same time, UMA is a wide-ranging experiment in the use of instructional technology in an open learning system at the college level. As an applied learning system, UMA is involved in a process of teaching and learning at a distance via mediated courses employed in a variety of off-campus settings. This process involves the identification of curricula for our target audiences; the development of teaching-at-a-distance courses and materials; and the delivery of these courses and materials by UMA-affiliated delivery systems in the five member states. Our experimental nature is an outgrowth of our operations. We have been charged by our principal fundor, the National Institute of Education, to conduct an operational investigation into all aspects of technology-based postsecondary education, as the major regional open learning model in the nation.

UMA BACKGROUND

UMA was formed in response to the reports of the Carnegie Commission on Nontraditional Study and the Newman Commission which called for broadened access to higher educational opportunities. These reports, as you recall, stressed the fundamental inequity of the American system of traditional higher education, in its emphasis upon college as an intense period of training for those between ages 18 and 22. For the adult in midcareer with responsibilities of job and family who wishes to train for a new career, to pursue additional certification in his or her area of employment, or simply to pursue further education for recreational or

self-improvement purposes, the traditional system can exact a considerable penalty, both in economic terms and in the reorientation in lifestyle required of the adult returning to campus. Indeed, because the campuses have traditionally tended to be "youth ghettoes" catering to the full-time 18-to-22-year-old, many adults have been reluctant even to consider such a return. Even with the increase in the average age of campus students over the past few years, the reluctance remains. In the Midwestern region served by UMA, the return to college would frequently require a change of residence, since colleges are relatively few and far between. For adult learners, the problem of access is one of bringing education to them, in their own environment, and in a manner which allows them the flexibility of structuring courses and programs to fit into their already-busy schedules.

UMA had its beginnings five years ago, as the State University of Nebraska (SUN) project, a fledgling outreach program of the University of Nebraska. At the beginning, our task seemed fairly simple, or so we thought. Nebraska had in place a nine-station, statewide Educational Television Network, and an elaborate production facility, housing the latest telecommunications equipment. Our assignment was to work with University faculty and administrators, to develop courseware for delivery via television across the state. We applied for, and received, several modest-sized federal seed grants from the Office of Education and the National Center for Educational Technology, to accomplish the design of such a system.

But as detailed planning progressed, SUN planners began to realize the magnitude of their undertaking. In order for such educational outreach materials to be successfully developed and employed, they had to be meticulously planned, to give the learner maximum flexibility and independence. Since the learner could no longer rely upon regular face-to-face meetings with course faculty, the courses had to be largely self-sufficient, learner-centered, and inclusive of everything the student needed to complete the course. To accomplish this task, we turned to the relatively new science of instructional design, which offers a systematic method of shaping content to the media in such manner as to allow maximum instructional effectiveness. And for the courses to appeal to learners, the mediated components had to be of an aesthetic quality which would allow them to compete with commercial television. Therefore, we added to the faculty members and instructional designers a cadre of experienced media production professionals. Thus, of necessity, was born a course development team, in which responsibilities are shared by a group of professionals in various areas of expertise. We did not invent such teams, of course; but in practice we confirmed their necessity.

Moreover, for the courses to compare favorably in academic quality with on-campus offerings, means had to be found to measure their instructional effectiveness, and to revise and remake portions which did not measure up. And television by itself was probably not adequate to the task:

print materials, audio, and other visuals were needed to accommodate the various learning styles of our target audiences. Thus, evaluators and measurement specialists joined our teams, and along with researchers to help us determine the characteristics and needs of the learners we were to serve.

In 1973, sponsorship of SUN was assumed by the newly-formed National Institute of Education. As the result of various fiscal and economic studies, it became clear that, in order for the system to operate cost-effectively without compromising academic or production quality, it would be necessary to expand beyond the boundaries of a single state. It was simply a matter of economy of scale: large number of learners had to be attracted to the system in order to keep the per-student costs within reasonable bounds. And so, after another year of intensive planning, the University of Mid-America was incorporated in 1974 by a consortium of state Universities. Our initial members were Kansas State and Iowa State Universities and the Universities of Nebraska, Missouri, and Kansas. The Universities of Iowa and South Dakota have since joined the consortium, and further expansion is contemplated. The Presidents of the member universities, as the UMA Board of Trustees, have the ultimate responsibility for all policy decisions. A core administrative and academic staff and instructional, media production, and research specialists are located in Lincoln, Nebraska, and tend to the day-to-day operations in curriculum development, course development, research and evaluation. Each member institution has a delivery

system coordinator who acts as a liaison person between his or her home institution and UMA.

CURRICULUM

The UMA curriculum is shaped by the UMA Office of Academic Affairs, acting with the advice of the Trustees, and of an Academic Council which consists of six faculty or administrative staff members of each participating university. In keeping with the multiple audiences UMA is designed to serve, our curriculum will consist of a variety of kinds of courses.

First of all, there will be a basic program of courses in conventional academic areas. Courses in the arts and humanities, and in the natural and social sciences, the backbone of a college education, form the basis of a general liberal education, as well as of any number of specialized degree programs. These courses are particularly important for that part of the UMA target audience -- roughly two-thirds -- who cite a college degree as the desired outcome of their course of study. For example, the first-developed UMA course is a two-semester introduction to accounting (a subject which combines the traditional disciplinary point of view with a highly practical content).

But although the established conceptual frameworks are within the disciplines, the questions of real interest and importance to society often lie across or between disciplines. Therefore, the UMA curriculum will include a number of interdisciplinary, problem-oriented courses which touch upon issues of real concern to our target audiences. For example, we are currently developing, with the assistant of a grant

from the Lilly Endowment, a course dealing with the World Food Problem. This course treats the problem from a number of perspectives: economic, agricultural, sociological, political. Another different kind of interdisciplinary course, on the cultural history of the Great Plains, treats its subject from historical, anthropoligical, geographical, sociological, and literary points of view.

Another area of curriculum frequently discussed by our Academic Council members is continuing professional education. For example, we are working with representatives of one of our member schools to plan an open learning course in continuing education for nurses. In a time when various of the professions are considering requiring continuing education for recertification (lawyers and architects, as well as nurses, in our region), open learning can offer a real service to these professions. Another example of this is a course currently under development at UMA; a training program for the certification of pesticides applicators. The program will be offered on a non-credit basis, to enable farmers and other users of pesticides to qualify for certification under forthcoming Environmental Protection Agency regulations. We have been working with EPA and with the Cooperative Extension Services at four of the UMA universities to develop this program for use throughout the region.

This leads us to a fourth area of the UMA curriculum, the non-credit course. It might be a practical course, like the pesticides program,

or a consumerism course, or a recreational course in sketching, photography or boating. Not all the needs of our target audiences are conventionally "creditable," and we must not allow ourselves to emphasize credit to the point that we merely replicate the college curriculum. If we are to meet our own goal of serving our target audiences, we must continue to respond to needs, in whatever area they might lie. This means continual needs assessment of our clientele.

COURSE DEVELOPMENT

I have briefly described the UMA course development team above. Let me go into more detail now. Each course team has four core members: an instructional designer, a resident content specialist, a formative evaluator and a professional media producer. The instructional designer serves as the coordinator of the course team, responsible for its day-to-day activities. UMA has a pool of full-time designers who work on course teams, using a constantly evolving UMA instructional development process. Basically, these professionals take the content generated by the content specialist and organize it into a systematic instructional format of goals, objectives and learning heirarchies. They are also responsible for working with the content experts and producers to assign different media roles to the course content. As full-time UMA staff, they provide continuity and consistent quality from course to course.

The resident content specialist is a faculty member on leave from his home institution, whether a UMA member institution or elsewhere. This academician works with a Senior Content Advisory Panel and various topic experts to generate course content, and is responsible for the academic quality of the course. UMA has no full-time resident faculty: content specialists are hired on a course-by-course basis, in an attempt to provide the best academic talent for each individual course.

Each team includes one or more evaluators, whose responsibility is the instructional validity of the course. UMA's formative evaluation procedures are more thorough and elaborate than those of most developers; for we recognize that the system must stand or fall on the effectiveness of its offerings. At every stage of the course development process, materials are tested out with sample audiences representing the target population, and revised within constraints of time and resources until the course team is satisfied that the materials are achieving their desired effect. Like the instructional designers, the evaluation specialists are full-time UMA staff members, thoroughly familiar with the UMA course development process.

The producers of UMA courses are experienced media professionals. Typically, they have had wide experience in commercial film and television production. Those we have employed to date have been a distinguished group, with major national awards to their credit. Producers are hired on a course-by-course basis, and work under the direction of a resident Executive Producer.

UMA courses include a variety of components: broadcast television and videocassettes, broadcast radio and audiocassettes, textbooks, study guides, newspaper articles, tests and examinations, and experimental computer modules. Not all courses include all components: the configuration of each course is determined by course content, target audience, delivery resources, and level of funding.

Not all UMA courses are produced from scratch; we have found that a substantial savings may be made by, where possible, incorporating existing material into a course structure. For instance, we are currently developing a poetry course based upon the successful Public Broadcasting Service series, "Anyone for Tennyson?". This course follows the lead of "The Adams Chronicles," "The Ascent of Man" and "Classic Theatre" by adapting a preexisting television series into a course structure. But it goes beyond those examples in that it includes more purely instructional companion materials to the television series.

We are also experimenting with the adaptation of courses produced by other developers to the UMA concept. We have one major adaptation, a psychology course, in use, along with a number of courses with minor adaptations; and we are contemplating the adaptation of one or more of the excellent Open University courses for use by American audiences. This allows an additional savings in development costs, by not duplicating others' efforts.

We currently have two UMA-developed courses in use, along with several adapted courses. We plan, by the end of 1977, to have some 8 to 10 UMA courses in delivery across the region and nation, with an additional 7 to 10 courses under development. And our long-range plans call for the development of 8 or more courses per year in succeeding years, dependent upon the level of outside funding. In a sense, we are really only just beginning to develop courses on a large scale; but what we have learned to date would fill volumes. And we anticipate that what we will learn, will fill library rooms.

Once we have the courseware, we must provide a use for it. Without any provision for delivery of courses, UMA would not be a teaching-learning system, but only a course development agency. We do lease courses to other open learning systems, colleges, and universities. But this fact in itself would give us little control over the use of our courses, and little feedback on the results of such use. Therefore, in order to complete the learning system, we have joined with our member states to provide for course delivery throughout the UMA region.

DELIVERY

As I have mentioned, the delivery systems in the member states are being developed by the states themselves, with advice and coordination from UMA. The United States Constitution leaves the responsibility for education to the states, and this is a prerogative which the states have jealously, and justifiably, guarded. So UMA planners felt it best that matters of delivery and accreditation be state responsibilities. Furthermore, each state has some delivery mechanisms already in place;

and this fact has helped to keep system costs lower than they might have been if each had to be developed from the ground up. I have mentioned Nebraska's statewide ETV network as one example. Iowa has a statewide network of Extension Centers which serve as open learning resource centers. Other states have public and commercial television, cable television delivery systems, radio networks, and other resources. Each state provides for personal attention to learners, through learning centers, and telephone and mail contact with learners. UMA provides advice and technical assistance to the states as necessary, to insure that the delivery systems are compatible with UMA courses, and that some degree of uniformity exists among the systems. UMA has provided modest amounts of seed money, from NIE and Ford Foundation grants, towards the development of the state delivery systems. But it is our intention that the delivery systems become a regular part of the state's higher education system. This is the best means we have of insuring that UMA courses are used as they are intended: as fully-accredited, study-at-home courses.

Three of our states have delivered UMA courses, and four of the five are planning deliveries this fall (Kansas is just gearing up to its first delivery, and South Dakota, our newest member, plans to offer one or two courses on a pilot basis). But only the Nebraska delivery system has had any extensive experience with course delivery. To date, the Nebraska system has, in two years, enrolled over 3,000 learners in a variety of UMA-produced and acquired courses. And we have accumulated

some interesting data on these learners. They range in age from 13 to over 70, with a median age of 37. Half of them have had no previous college education; 2/3 have degree aspirations. And 1/3 live on farms or ranches, or in towns of under 2,000 population. The majority are women. These statistics indicate that we are, in fact, reaching a population heretofore unserved by postsecondary education, and one which would probably remain unserved if it were not for UMA. And we are helping to define this population through a continuing investigation into the characteristics of our enrollees. So, we feel we are achieving our goal of service to the learner, and we are confident that as our level of operations increases, we will reach more and more of them. We have evidence that indicates that the public-access components of UMA courses -- television and newspapers -- are also reaching large numbers of informal learners who do not enroll for the courses, but view the television broadcasts or read the newspaper articles. To date we have no accurate method of measuring the number of informal learners who are taking advantage of UMA courses, though preliminary surveys indicate they number well into the thousands; but we recognize that this group might, in fact, be our most significant audience, in terms of the system's impact upon society.

Curriculum development, course development and delivery - these are the major elements of UMA as an applied learning system. But some other aspects of UMA are worthy of mention, as well. I have noted that our

major support comes from the National Institute of Education; but we also receive support from a variety of other public and private sources. In the present fiscal year, UMA has received over $1.1 million in grant funds from sources other than NIE; and each of our member states has made major fiscal commitments to the development of its open learning delivery system. Thus, we are building a broad base of support which will enable the system to continue in operation after federal research and development funding ceases. It is our plan to attain operational self-sufficiency by 1981.

Another major source of income for UMA in the future will be the leasing of courses to other postsecondary systems across the nation. We have just created an Office of Marketing to insure the widest possible use of UMA courses, and our efforts are already beginning to bear fruit. Approximately 50 colleges and universities across the country have thus far signed agreements to use UMA's new poetry course beginning in October of this year. UMA is also committed to the dissemination of information about the open learning system. As a pilot project, we are exploring new areas, and conducting in-depth studies into areas of general interest to other learning systems. By disseminating what we have learned about the teaching-learning process, we hope to be of assistance to other developers in advancing the state of the art of applied learning system development.

NEEDS FOR FURTHER RESEARCH AND DEVELOPMENT

I have given you a general overview of UMA as an applied learning system; I would like now to dwell upon a few of the continuing problems we are trying to solve, gaps in which the state of the art could stand some improvement.

One practical difficulty we face on a daily basis is accumulating and interpreting research and evaluation data quickly enough for it to be useful to course development teams. The gathering and processing of data takes time, whether it be effectiveness data on a single course component or a profile of a large number of potential learners. If these data are to be of use in the course development process, methods must be built into the system to allow information to be quickly processed and given to the course developers who need it. We have made progress along these lines, and have instituted new procedures which allow for regular quality checkpoints in the course development process. Yet it is doubtful whether it will ever really be possible for all significant data to be put into useful form within the constraints of course development timelines. Larger and more sophisticated data gathering and processing equipment might be the answer: but this, in turn, raises the question of cost-effectiveness.

A related question is the turnaround time of the course development process itself, from the identification of an area of curriculum for consideration to the offering of a course in that area. The assembly

of a course team, the planning of a course, securing funding, production: each of these steps takes time; and, particularly in interdisciplinary areas dealing with particular problems, there is frequently a need to get a course off the drawing boards and into use as quickly as possible. I offer as an example our course in World Food Problems, a topic in which new data are coming in daily, and last week's information is rapidly outmoded. We need a long-range system to identify tomorrow's topics, and a means of finding those academicians and course developers with expertise in these new areas.

Another of our continuing areas of investigation is the usefulness of new technologies, not yet in use, for educational purposes. We are currently contemplating an experimental investigation into the uses of satellites for open learning over a large region. In this area, particularly, there is a real need to identify potential uses of the technology, and stake out an area, before the technology is earmarked for other uses. Other examples would be the potential of the latest generation of computers; various devices for time-compression of television broadcast, or storage of materials (videodisc for home use for instance); or interactive television cable systems. We must keep abreast of the latest technologies, and assess each of them for its educational implications; but at the same time, we must have the wisdom not to embrace technology for its own sake.

In this same vein, we must also continue to advance the state of the art in matching each medium to its best instructional purpose.

We know that the roles and relationships of the various media used in a course are critical to the success of a course. But we do not know how such judgments might best be made by our instructional developers. Nor have we discovered how best to assess the relative weight to be given each medium, to avoid reaching a point of saturation by overusing any single medium. This is one item on our agenda of problems for continuing investigation: the development of a theory of media utilization for instruction.

One point we are only beginning to realize at UMA is that we might not be using technology to its best advantage. Our delivery systems may be more innovative than our curriculum. To a great extent, our academic orientation is still towards the traditional areas of curriculum, towards traditional modes of presentation. We must recognize that instructional television is still in its infancy, despite all the years of experimentation with it; and that it may have undiscovered strengths all its own awaiting discovery. Each medium offers new possibilities for presenting new modes of thought, new ways of perceiving. We do not know what these possibilities might be, or what effect they might have on future curricula; but we must be constantly on the lookout for them, recognizing that they may point the directions that technology-based education will take in the future.

These last two points speak directly to UMA's role as an experiment while perfecting what we do as an applied system. We must continue to

look for ways of improving and modifying what we do, whether through new technologies or new approaches, in order to increase the effectiveness of the system in the long run. These experimental questions may not have immediate operational payoffs; indeed, they may not have payoffs at all. But if we are to continue in the forefront of educational innovation, we must continue to look in these new directions.

RECOMMENDATIONS FOR PROFESSIONAL DEVELOPMENT PROGRAM

On the basis of these gaps I have identified, I would like to make several recommendations concerning directions the professional development program might take in training people for careers in instructional technology.

First of all, there is a real need for the retraining of traditional on-campus faculty, who have the academic expertise, in innovative methods of developing materials for the media. At present, our course teams consist of content specialists and designers, as separate roles. There is no reason that, in the future, these roles might not be combined. We are, of course, combating a tremendous inertia upon campus, a tendency to do things as they have always been done. But there is a significant number of faculty members who are interested in technology and its uses. A concerted effort should be made to reach them, as a major untapped resource, and train them in innovative means of using the media to present their materials. We must get them to go beyond the "Sunrise Semester" mode (though it, too, has its role), and learn to use the media effectively.

Similarly, we should concentrate upon means of training instructional media people, with an emphasis upon "instructional." We need more designers and evaluators, more people who understand the capabilities and limitations of the media, and more people who can devise ways in which the media can be used effectively in education. These two points, I suspect, are really one: we must find ways of bridging the gap between the media and the academies, if their wedding is ever to be anything more than an uncomfortable "shotgun" affair. The course team approach being tested by UMA holds considerable promise.

In the area of instructional media, we need more people who are out on the forefront of the new technologies: who understand what the new roles and possibilities of the media are, and what their applications to education might be. Experimentation has gone far ahead of practice. For instance, it is apparent that satellites and videodiscs have important implications for education. But we need to determine just what these implications are, in terms of harnessing these technologies for instruction. We need a new breed of practitioners who are able to harness new advances in the technologies for instructional purposes.

And finally, we need a group of curriculum specialists who are trained to think in nontraditional ways, who see curricular possibilities that lie beyond the conventional disciplines and campuses, who recognize what the educational needs of the people really are, and what resources exist to meet these needs.

Admittedly, the training of these last two groups of visionaries will be a difficult matter. Who is to train them? As instructional technology advances, and more innovative curricula are developed, they will come along. But we need to find ways to encourage their development, by training people to think of education in a new mode. For a new mode of education is being developed by UMA, as an applied system of teaching and learning which utilizes technology to bring college courses to people on their own terms. Such a system could have major implications for the future.